

# PATENT ABSTRACTS OF JAPAN

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## (54) PORTABLE VIDEO TELEPHONE SET

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To prevent a picture that a user does not want to be seen by an opposite party from being transmitted to the opposite party when a photographing object goes out of a camera photographing range during communication on a portable video telephone set.

**SOLUTION:** Still picture data (b) for the portion of one screen among moving picture data (a) supplied from the camera 1 is held in a storage device 2 as reference picture data. Picture data of continuous screens constituting moving picture data which is supplied from a camera 1 is periodically compared with picture data of a stored picture data by a comparing device 3 and, then, it is decided whether the photographing object comes out of the photographing range or not by whether a difference value between both kinds of data exceeds a prescribed reference value or not. When it is decided that the object goes out of the range, transmission data is changed-over from moving picture data into still picture data which is held in the storage device 2.



## LEGAL STATUS

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rejection]

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the examiner's decision of rejection or  
application converted registration]

[Date of final disposal for application]

[Patent number]

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CLAIMS

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[Claim(s)]

[Claim 1] An image pick-up means to be the mobile videophone machine which can transmit a dynamic image, and to change the incident light from fixed photographic coverage into the dynamic-image data which consist of a continuous screen, and to supply it to a message partner, A storage means to acquire the image data for one screen in said dynamic-image data supplied by said image pick-up means, and to memorize as static-image data, The image data of the continuous screen which constitutes said dynamic-image data supplied by said image pick-up means, Said static-image data memorized by said storage means are compared periodically. A detection means to detect whether a user's photography object separated from said photographic coverage of said image pick-up means, If it is detected that said photography object separated from said photographic coverage with said detection means A mobile videophone machine equipped with the output means for switching which switches and chooses the image data which transmits to said message partner from said dynamic-image data supplied by said image pick-up means as said static-image data memorized by said storage means.

[Claim 2] Said output means for switching is a mobile videophone machine according to claim 1 which will switch and choose from said static-image data as said dynamic-image data the image data which transmits to said message partner if it detects that said detection means entered during the period which has chosen said static-image data as image data which transmits to said message partner, and said photography object entered again in said photographic coverage.

[Claim 3] the difference between the image data of the both sides which compare said detection means - when less [ detecting that said photography object separated from said photographic coverage, when the value exceeded the 1st predetermined reference value, and ] than the 2nd after that predetermined reference value, said photography object entered again in said photographic coverage -- detecting -- a mobile videophone machine according to claim 2 with said 2nd reference value smaller than said 1st reference value.

[Claim 4] Acquisition of the static-image data based on said storage means is a mobile videophone machine given in either of claims 1-3 which is performed periodically.

[Claim 5] The periodical comparison of the image data based on said detection means is a mobile videophone machine given in either of claims 1-4 which constitutes said dynamic-image data and which is performed for every screen.

[Claim 6] The periodical comparison of the image data based on said detection means is a mobile videophone machine given in either of claims 1-4 which is performed at 1 time of a rate for two or more screens of every which constitute said dynamic-image data.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the output control of the transmitting image data in a mobile videophone machine about a mobile videophone machine.

[0002]

[Description of the Prior Art] In recent years, utilization of the mobile videophone machine which can transmit a dynamic image is attained to the message partner. such a mobile videophone machine -- general -- a message person (user) -- it is possible to transmit the dynamic image to a message partner, photoing his upper half of the body etc. with the camera in which it was contained by the mobile videophone machine, and it is suitable for the use under migration of a user etc. with the small configuration which realized portability.

[0003]

[Problem(s) to be Solved by the Invention] however, the configuration miniaturized in such a mobile videophone machine in order to realize portability -- or the thing for which photographic coverage with the camera built in a mobile videophone machine for the use under migration of a user is fixed to the fixed range -- difficult -- a user -- the situation where photography objects, such as his upper half of the body, to photo with a camera originally will separate from the photographic coverage of a camera may happen frequently.

[0004] In such a case, in the conventional mobile videophone machine, it does not remain for giving a message partner displeasure by the dynamic image which the meaningless dynamic image which a user does not mean to the message other party will be sent, and is sent being confused at all, but there is a possibility that extra sensitive information and privacy information which are not known as a message partner with the transmitted dynamic image may be transmitted.

[0005] The purpose of this invention is offering the mobile videophone machine which a message partner's is not made to produce displeasure and neither extra sensitive information nor privacy information reveals to a message partner by switching the dynamic-image data transmitted to a message partner to the static-image data currently held beforehand, when the photography object which the user meant shifts from the photographic coverage of a camera.

[0006]

[Means for Solving the Problem] According to claim 1, the mobile videophone machine which can transmit a dynamic image is equipped with an image pick-up means, a storage means, a detection means, and an output means for switching to a message partner. The incident light from fixed photographic coverage is changed into the dynamic-image data which consist of a continuous screen, and an image pick-up means supplies it. A storage means acquires the image data for one screen in the dynamic-image data supplied by the image pick-up means, and memorizes it as static-image data. A detection means detects whether the image data of the continuous screen which constitutes the dynamic-image data supplied by the image pick-up means was periodically compared with the static-image data memorized by the storage means, and a user's photography object separated from the photographic

coverage of an image pick-up means. If it is detected that the photography object separated from photographic coverage with the detection means, it will switch and choose an output means for switching from the dynamic-image data to which the image data which transmits to a message partner is supplied by the image pick-up means as the static-image data memorized by the storage means.

[0007] When the photography object which a user means separates from the fixed photographic coverage of an image pick-up means according to invention of claim 1, in order to switch the dynamic-image data transmitted to the message other party to the static-image data currently held beforehand, It can prevent that the extra sensitive information which do not let the message other party produce the displeasure by turbulence of an image, and be not known to the message other party, and privacy information are revealed to the message other party.

[0008] According to claim 2, in a mobile videophone machine according to claim 1, an output means for switching will switch and choose from static-image data as dynamic-image data the image data which transmits to a message partner, if it detects that the detection means entered during the period which has chosen static-image data as image data which transmits to a message partner, and the photography object entered again in photographic coverage.

[0009] Since according to invention of claim 2 transmission of a dynamic image is resumed when a photography object returns in photographic coverage after that even if it is the case where a user's photography object has once separated from photographic coverage, the transmission interruption of the dynamic image to a message partner can be limited to the minimum period.

[0010] the difference between the image data of the both sides which compare a detection means in a mobile videophone machine according to claim 2 according to claim 3 -- if less [ if a value exceeds the 1st predetermined reference value, it will detect that the photography object separated from photographic coverage, and ] than the 2nd after that predetermined reference value, it detects that the photography object entered again in photographic coverage, and the 2nd reference value is smaller than the 1st reference value.

[0011] According to invention of claim 3, once a message partner's transmitting image switches from a dynamic image to a static image, since it is set up lower than the reference value for switching to a static image, the reference value for returning to a dynamic image can prevent the situation which a change-over of a dynamic image/static image generates frequently near the boundary of the comparison criteria of a detection means.

[0012] According to claim 4, in a mobile videophone machine given in either of claims 1-3, acquisition of the static-image data based on a storage means is performed periodically.

[0013] According to invention of claim 4, since the static-image data for a change-over are periodically updated by the image data for one screen of the newest dynamic-image data, when a transmitting image switches to a static image, the sense of incongruity given to the message other party can be made small.

[0014] According to claim 5, in a mobile videophone machine given in either of claims 1-4, the periodical comparison of the image data based on a detection means is performed for each [ which constitutes dynamic-image data ] screen of every.

[0015] According to invention of claim 5, since the image data based on a detection means is compared by high frequency, the change-over to the static image of a transmitting image can be performed to more exact timing.

[0016] According to claim 6, in a mobile videophone machine given in either of claims 1-4, the periodical comparison of the image data based on a detection means is performed at 1 time of a rate for two or more screens of every which constitute dynamic-image data.

[0017] According to invention of claim 6, since the image data based on a detection means is compared at fixed spacing, the digital signal processor (DSP) of high performance is not needed, but the change-over to the static image of a transmitting image can be performed.

[0018]

[Embodiment of the Invention] Below, with reference to a drawing, the mobile videophone machine by the gestalt of implementation of this invention is explained.

[0019] Drawing 1 is the external view of the mobile videophone machine 10 by the gestalt of

implementation of this invention. the mobile videophone machine 10 -- the camera as an image pick-up means -- building -- \*\*\*\* -- the aperture 20 for photography -- minding -- for example, the user under message -- the light from photographic subjects, such as his upper half of the body, is received. Moreover, the dynamic image transmitted by the message phase hand is displayed on the display screen 30.

[0020] Drawing 2 is a functional block diagram explaining the function of the switching control of the dynamic image/static image of the transmitting image in the mobile videophone machine 10 by the gestalt of implementation of this invention. In addition, in fact, the function shown in drawing 2 is performed by software by DSP in the mobile videophone machine 10 so that it may mention later.

[0021] Below, with reference to drawing 2, the function of the switching control of the transmitting image of the mobile videophone machine 10 by the gestalt of implementation of this invention is explained.

[0022] With reference to drawing 2, the light from the photographic subject which carried out incidence through the aperture 20 for photography of drawing 1 is changed into an electrical signal by the camera 1, and is outputted as dynamic-image data a which consist of a continuous screen.

[0023] This dynamic-image data a carries out through [ of the comparison equipment 3 ], and is also directly given to the one side input of a power control device 4 while it is given to the one side input of comparison equipment 3.

[0024] Moreover, among the dynamic-image data a outputted from a camera 1, to predetermined timing, a store 2 acquires the image data for one screen, and memorizes it as static-image data b. And the static-image data b memorized by the store 2 carry out through [ of the comparison equipment 3 ], and are also directly given to the another side input of a power control device 4 while they are given to the another side input of comparison equipment 3.

[0025] the image data for one screen in which comparison equipment 3 has the continuous screen which constitutes the dynamic-image data a supplied directly from a camera 1, and the static-image data b supplied from a store 2 -- comparing -- the difference of both data -- based on a value, it judges whether a user's original photography object (for example, a user his upper half of the body) separated from the photographic coverage of a camera 1. And the control signal c which shows the judgment result is generated, and it gives the control input of a power control device 4. Comparison actuation of comparison equipment 3 is explained to a detail later.

[0026] A power control device 4 chooses either of the static-image data b supplied by carrying out through [ of the comparison equipment 3 ] from the dynamic-image data a supplied by carrying out through [ of the comparison equipment 3 ] from a camera 1, or a store 2 according to the control signal c given from comparison equipment 3, outputs it as transmitting image data d, and is given to coding equipment 5. Transmitting image data d encoded with coding equipment 5 is sent out from the mobile videophone machine concerned by the communication device which is not illustrated.

[0027] Next, the processing at the time of controlling by software a change-over of the dynamic image/static image shown in the functional block diagram of drawing 2 by DSP which is not illustrated is explained.

[0028] Drawing 3 is the flow Fig. showing basic actuation of change-over control of the dynamic image/static image of the mobile videophone machine by the gestalt of implementation of this invention. If a power source is supplied to a camera 1 and turned on with reference to drawing 2 and drawing 3, in step S1, the image data for one screen (one frame) at the time in early stages of the dynamic-image data a supplied from a camera 1 will be held at storage 2.

[0029] When it is detected that the photography object separated from photographic coverage, the static-image data b for this one screen are used also as transmitting image data d, while being used as criteria image data for the comparison with the dynamic-image data a supplied from a camera 1.

[0030] In addition, as for the data storage for one screen to a store 2, it is desirable that it is made to carry out periodically. If the static-image data b for a change-over are periodically updated on one screen of the newest dynamic-image data a, a transmitting image can make smaller the sense of incongruity given to the message other party at the moment of switching from a dynamic image to a

static image.

[0031] In step S1, if the image data for one screen is held at a store 2, supply (step S2) of the dynamic-image data a from a camera 1 will be performed henceforth repeatedly.

[0032] Next, drawing 4 is the flow Fig. showing more change-over control processing of the transmitting image performed during the activation period of step S2 of drawing 3 to which the dynamic-image data a are supplied from a camera 1 in a detail.

[0033] The data for [ with the continuous screen which constitutes the dynamic-image data a supplied from a camera 1 ] one screen are compared with the static-image data b currently held at the store 2 in step S21. the comparison with this image data a and b -- each screen (frame) of every [ of the dynamic-image data a ] -- you may carry out -- 1 time per two or more screens -- it comes out comparatively, and it may open and fixed spacing may be performed. In the case of the former, since image data is compared by high frequency, a dynamic image/static image can be switched to more exact timing. Moreover, in the case of the latter, since image data is compared at fixed spacing, it is not necessary to use highly precise DSP. Anyway, it depends for comparative frequency on the throughput of DSP.

[0034] Here, comparison actuation of image data a and b is explained to a detail. With the gestalt of implementation of this invention, the motion in an image decides to express in the vector field which defined change on each point on an image. The description which shows a motion of an image with which this vector field are called extract of blurring of the image which met in the rate restricted type based on the concentration curved surface of a pixel value, local pattern matching, and the motion direction, and adjoining vectors are constituted so that various conditions, such as a limit of being alike, may be satisfied.

[0035] Thus, the image of each body can be cut down by summarizing what adjoined among the vectors of the extracted vector field, and was alike to one. And the amount of motion vectors of the body which compares a color and brightness for each point on an image, and is moving within the image is calculated using DSP. Thus, a motion of the target body is detected and the comparison with the static-image data b currently held at the store 2 is performed. The valuation basis of motion detection processing is set up in consideration of the allowable error in location-allowable-error, time allowable-error, and color specification space.

[0036] The technique which detects the motion in an image and generally pursues the body is applied to various applications, such as logging of counting of the animal object in an image and each body, and coding of a dynamic image. These techniques are already used for the animation coding technique of having a motion detection function, such as a videocassette recorder and MPEG, etc., and can be realized easily.

[0037] Here, the processing using the technique of pattern matching as an example of comparison processing of the image data a and b of step S21 of drawing 4 is explained. Drawing 5 and drawing 6 are the flow Figs. showing such processing, especially drawing 5 shows processing of the initialization phase of comparison actuation, and drawing 6 shows processing of the comparison actuation [ itself ]. Moreover, (a) of drawing 7 shows typically the pixel configuration for one screen of image data (one frame), and (b) of drawing 7 is drawing showing typically the pixel configuration of the two-dimensional register used for comparison processing.

[0038] If a camera 1 is turned on as an initialization process of comparison actuation (step S21 of drawing 4) with reference to drawing 5, the image data of the beginning of the dynamic-image data a outputted from a camera 1 or one screen (one frame) of predetermined timing will be sampled (step S31). This processing is equivalent to processing of step S1 of the flow Fig. of drawing 3.

[0039] In addition, as shown in drawing 7 (a), one frame shall be constituted from 160x120 pixels by the gestalt of implementation of this invention. To the sampled static-image data b, DSP performs the Laplacian operation and extracts the profile of the pattern (for example, upper half of the body of the user who is a photographic subject) used as the target of motion detection (step S32).

[0040] And an image is cut off and it considers as the criteria image for a comparison so that the profile from which the \*\*\*\* was extracted may be included from the static image with which the \*\*\*\* was sampled (image enclosed with the dotted line X of drawing 7 (a)). And this cut-off criteria image is

saved at the two-dimensional register A of the  $m \times n$  pixel which is not illustrated (step S33). Under the present circumstances, expansion/telescopic motion is processed in a criteria image so that a criteria image may be settled in one fourth of the range of the two-dimensional register A of a  $m \times n$  pixel (image enclosed with alternate long and short dash line X' of drawing 7 (b)).

[0041] Next, comparison processing of image data is explained with reference to drawing 6. First, in step S41, the pattern profile of image data lost-motion detection of one screen (one frame) of the dynamic-image data a supplied from a camera 1 is extracted by the same technique as the pattern extract of the criteria image in the above-mentioned step S32 (drawing 5), and the image cut off so that the profile might be included is saved in the mode shown in above-mentioned drawing 7 at another two-dimensional register B which is not illustrated (step S42).

[0042] and the difference of the image data saved in step S43 at two two-dimensional registers A and B -- a value is calculated by DSP.

[0043] the gestalt of implementation of this invention -- the cross-correlation function of the pixel data for every coordinate point of two two-dimensional registers A and B -- calculating -- the above -- difference -- a value is computed and that result is compared with the predetermined reference value (step S44). the computed difference -- if the value has not reached a reference value, it judges that the image pattern of two registers is mutually in agreement, and a control signal c is turned OFF (step S45). on the other hand -- difference -- if the value is over the reference value, it will judge that the image pattern of two registers is not in agreement, and a control signal c will be turned ON (step S46). That is, it is judged as that in which the same image as a criteria image (for example, image of a user's upper half of the body) does not exist in the fixed photographic coverage of a camera 1, or only the part exists.

[0044] the difference between image data a as returned to the flow Fig. of change-over control of drawing 4 and shown at step S44 of drawing 6 in step S22, and b -- the comparison with a value and a predetermined reference value is performed, and ON/OFF control of the control signal c (drawing 2) is carried out by the result.

[0045] Namely, although the control signal c is off in an initial state One screen of the dynamic-image data a which the photographic coverage of a camera 1 shifts from the photography object (a user's upper half of the body) which it is originally going to photo with the camera 1, and are outputted from a camera 1 during a message, In step S24 difference with criteria image data b currently held at the store 2 (drawing 2), if it is judged that a value exceeds a predetermined reference value A control signal c serves as ON and the transmitting image data to a message place is switched to the static-image (criteria image) data b currently held at the store 2 from the dynamic-image data a supplied on real time from a camera 1.

[0046] Thus, even if it is the case where a user's photography object separates from the fixed photographic coverage of a camera, it can prevent that the message other party will look at the image which it does not let sense the displeasure by turbulence of an image for the message other party, and be not known to the message other party.

[0047] In the condition that the static-image data b currently held by the control signal c already serving as ON on the other hand at the store 2 are supplied to coding equipment 5 When coincidence of a pattern is again detected in step S22 (i.e., when a user's photography object enters in the photographic coverage of a camera 1 again), it sets to step S23. A control signal c is switched off and the transmitting image data to a message phase hand is switched to the original dynamic-image data a by this from the static-image data b.

[0048] in addition, near the boundary of the reference value used at step S22 (step S44 of drawing 6) -- the difference of image data -- in order to prevent that a change-over of a dynamic image/static image occurs frequently, and gives displeasure to the message other party when changing a value, the reference value for switching a control signal c to OFF from ON is set as a value lower than the reference value for switching a control signal c to ON from OFF.

[0049] As mentioned above, since transmission of a dynamic image can be resumed when a photography object returns in the photographic coverage of a camera after that even if it is the case where a user's photography object has once separated from the photographic coverage of a camera, the



transmission interruption period of a dynamic image can be minimized.

[0050] It should be thought that the gestalt of the operation indicated this time is [ no ] instantiation at points, and restrictive. The range of this invention is shown by the above-mentioned not explanation but claim, and it is meant that all modification in a claim, equal semantics, and within the limits is included. [0051]

[Effect of the Invention] As mentioned above, the extra sensitive information which be not known and privacy information become possible [ preventing revealing to the message other party ] at the message other party, without making the message other party produce the displeasure by turbulence of an image according to this invention, even when a user's photography object has separated from the photographic coverage of an image pick-up means.

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**TECHNICAL FIELD**

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[Field of the Invention] Especially this invention relates to the output control of the transmitting image data in a mobile videophone machine about a mobile videophone machine.  
[0002]

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**PRIOR ART**

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[Description of the Prior Art] In recent years, utilization of the mobile videophone machine which can transmit a dynamic image is attained to the message partner. such a mobile videophone machine -- general -- a message person (user) -- it is possible to transmit the dynamic image to a message partner, photoing his upper half of the body etc. with the camera in which it was contained by the mobile videophone machine, and it is suitable for the use under migration of a user etc. with the small configuration which realized portability.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] As mentioned above, the extra sensitive information which be not known and privacy information become possible [ preventing revealing to the message other party ] at the message other party, without making the message other party produce the displeasure by turbulence of an image according to this invention, even when a user's photography object has separated from the photographic coverage of an image pick-up means.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] however, the configuration miniaturized in such a mobile videophone machine in order to realize portability -- or the thing for which photographic coverage with the camera built in a mobile videophone machine for the use under migration of a user is fixed to the fixed range -- difficult -- a user -- the situation where photography objects, such as his upper half of the body, to photo with a camera originally will separate from the photographic coverage of a camera may happen frequently.

[0004] In such a case, in the conventional mobile videophone machine, it does not remain for giving a message partner displeasure by the dynamic image which the meaningless dynamic image which a user does not mean to the message other party will be sent, and is sent being confused at all, but there is a possibility that extra sensitive information and privacy information which are not known as a message partner with the transmitted dynamic image may be transmitted.

[0005] The purpose of this invention is offering the mobile videophone machine which a message partner's is not made to produce displeasure and neither extra sensitive information nor privacy information reveals to a message partner by switching the dynamic-image data transmitted to a message partner to the static-image data currently held beforehand, when the photography object which the user meant shifts from the photographic coverage of a camera.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the external view of the mobile videophone machine by the gestalt of implementation of this invention.

[Drawing 2] It is the functional block diagram of the switching control of the mobile videophone machine by the gestalt of implementation of this invention.

[Drawing 3] It is the flow Fig. showing basic actuation of image change-over control of the mobile videophone machine by the gestalt of implementation of this invention.

[Drawing 4] It is the flow Fig. showing detailed processing of image change-over control of the mobile videophone machine by the gestalt of implementation of this invention.

[Drawing 5] It is the flow Fig. showing the initialization process for the image data comparison of the mobile videophone machine by the gestalt of implementation of this invention.

[Drawing 6] It is the flow Fig. showing image data comparison processing of the mobile videophone machine by the gestalt of implementation of this invention.

[Drawing 7] It is drawing showing typically the image pattern extracted for comparison processing of drawing 6.

[Description of Notations]

1 A camera, 2 Storage, 3 Comparison equipment, 4 A power control device, 5 Coding equipment, 10 A mobile videophone machine, 20 The aperture for photography, 30 Display screen.

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[Translation done.]

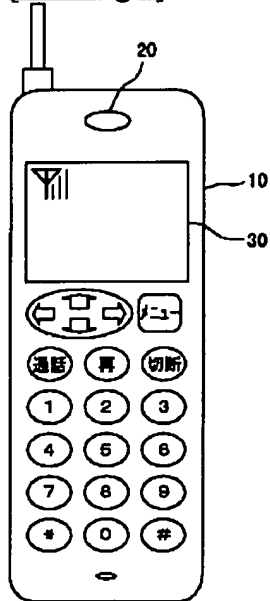
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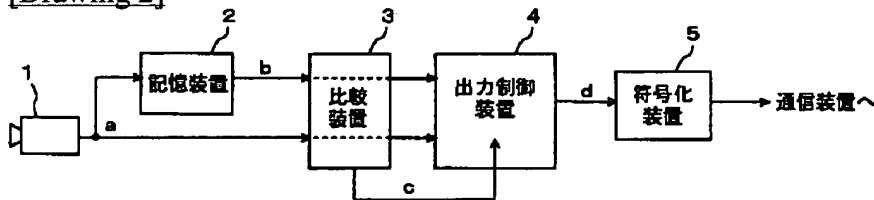
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## DRAWINGS

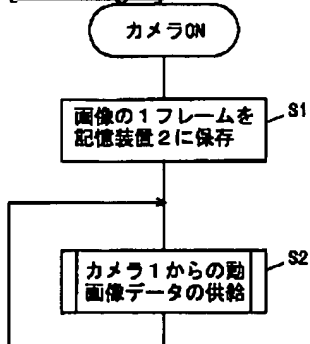
[Drawing 1]



[Drawing 2]

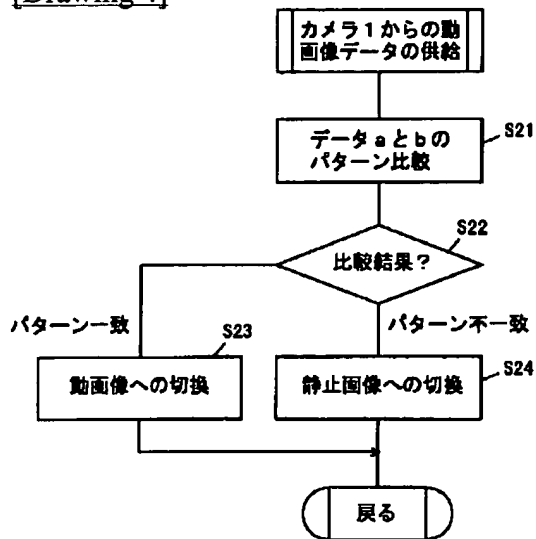


[Drawing 3]

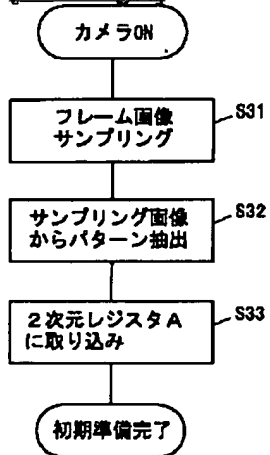


3: Comparison  
 4: Control  
 2: Storage for static image  
 C: Control signal  
 b: static image  
 d: transmitting image data  
 S: Code

[Drawing 4]

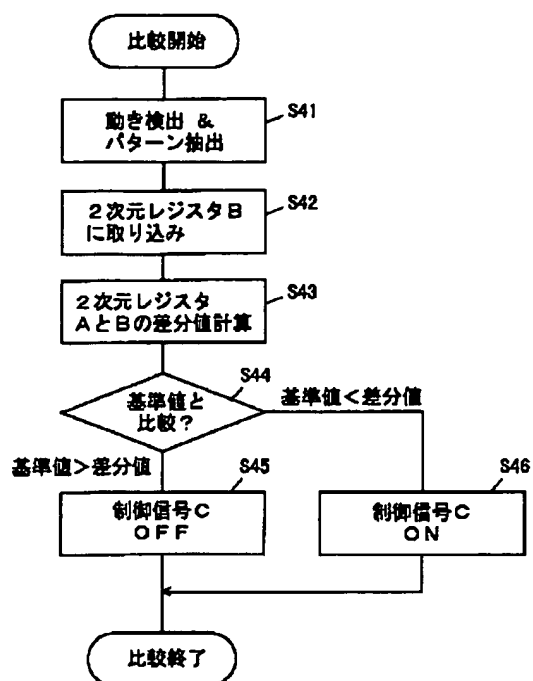


[Drawing 5]

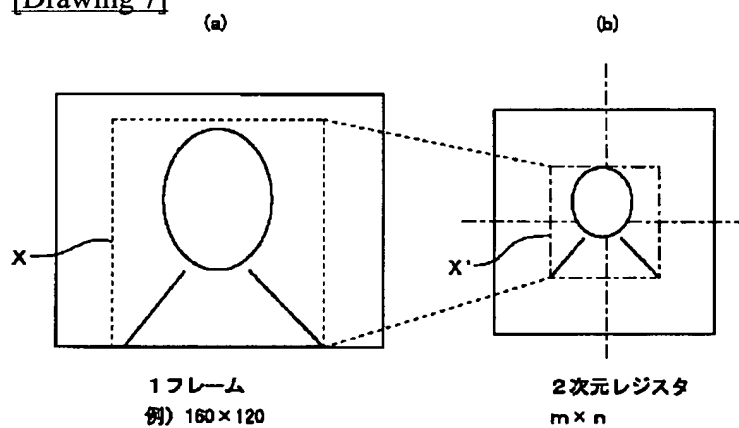


[Drawing 6]





[Drawing 7]



[Translation done.]